

ABSTRACT

FLOW BALANCING IN GAS DISTRIBUTION NETWORKS

Flow distribution networks that supply process gas to two or more stations in a multi-station deposition chamber. Each flow distribution network includes an inlet and flow distribution lines for carrying process gas to the stations. The flow distribution lines include a branch point downstream from the inlet and two or more branches downstream from the branch point. Each branch supplies a station. The flow distribution network also includes highly variable flow elements in each branch. Restrictive components are placed downstream from the variable control elements in each branch. These restrictive components are nominally identical and designed to shift the bulk of the pressure drop away from the variable flow components to improve flow balancing while not unduly increasing inlet pressure. In some cases, the load shifting allows the more variable flow components to operate in the unchoked flow regime.

FIG. 2A



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